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the Lineman

RURAL ELECTRIFICATION ADMINISTRATION - U. S. DEPARTMENT OF AGRICULTURE



How Would YOU Have Prevented Them?

A lineman was unloading poles from a trailer. The butt of one pole struck him on the right thigh. Both upper and lower bones of this leg were broken. Lost time - six weeks.

A truck steering wheel locked causing truck to leave road and go in ditch. The driver's chest was bruised. He received other cuts and bruises.

A lineman was removing a transformer from a 35-foot pole. His left hand brushed against hot jumper. His hooks cut out and he slid down pole. The fall bruised and skinned the

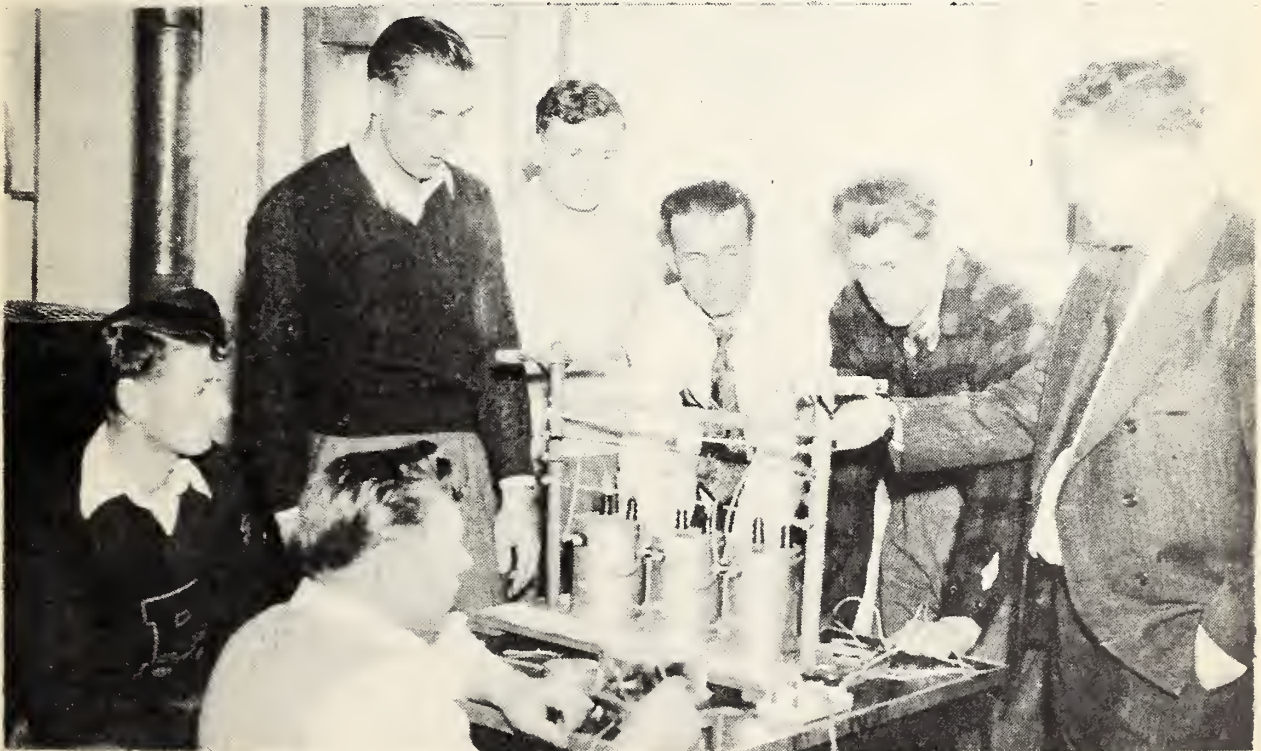
right side of his face and left thigh. He suffered electrical burns on the fingers of his left hand and right forearm. Lost time - one week.

A crew was stringing wire. One employee threw a 3-bolt clamp to another employee and hit him on the head. The wound required stitching. Lost time - ?

A lineman was splicing conductor. He short-circuited a 2.3KV line which then burnt in two. The flash burned his eyes and face.

(Continued on Page Two)

Wisconsin's Model Substation



Herman Potthast (right), Wisconsin Job Training and Safety Instructor, shows a group of line employees how to hook up transformers on a model substation.

One Second From Eternity

'(This article appeared in the Omaha World Herald of December 23. In the belief that it could be reprinted or treated editorially as a contribution to the successful promotion of safety and accident prevention, the public relations department of the Union Pacific Railroad sent it to the editors of many newspapers throughout the country. Since the letter first appeared in the press, they found out it was written by Chester E. Beltz of Council Bluffs, Iowa, one of the railroad company's engine service employees with a perfect accident record.)

'A railroad engineer, whose train nearly crashed into a car at Fremont last Sunday, Tuesday addressed an open letter to 'the youth and his girl' in the car.

'His letter, sent to The World-Herald, says:

'I don't know who you are, it's true, but I do know you were scared to death Sunday evening near 9 o'clock when you drove your car across directly in front of a speeding passenger train. It was so close that I, in the cab, could see the young girl (your sweetheart, I presume) throw her hands up in front of her face and cringe up against you in stark horror.

'If I were that young girl I'd pull away from you, fast. You don't have good sense, son. You probably say you love her. I wonder. Those we love we try to protect. But not you.

'Wouldn't that have been a nice Christmas present to hand your mother - a broken and battered body. And how do you think that we in the cab of that engine would feel. We are human beings, too. We have young ones waiting home for us to return. We, too, could have been killed.

'You and your girl were one second from eternity Sunday, son.

'I hope you read this and know it means you, and that your girl will, too. Next time you go driving around, stop and look. We don't want to hit you but we are helpless, as we cannot swerve away from our given rail.

'If I were you, son, and you, too, sis, I'd thank God for that split second He granted you Sunday evening.

How Would YOU Have Prevented Them?

(Continued from Page One)

A lineman was working on a new creosoted pole installing a guy about 14 feet from the ground. His hooks cut out and he fell to the ground in a sitting position. The fall broke a rib. Lost time - 21 days.

An employee was cutting brush. His foot slipped and he lost his balance. The axe blade struck his left leg half way between the ankle and knee and cut a gash 1½ inches long to the bone. Lost time - one week.

An employee was unloading brush from truck at city dump. His foot slipped and he fell. Tried to break fall with hands - left hand struck broken glass. Severe cuts at base of left thumb. Lost time - 10 days.

Employee stooped down to unhook safety chains between pole trailer and truck. In doing so he struck his head on a nail driven into one of the poles on the trailer. Puncture wound over right eye. Lost time - none - happened Friday evening; back to work Monday.

A power plant operator was wiping a diesel driven generator which was in operation. The rag caught in the generator and pulled the operators hand in before he could release it. The flesh on the first 3 fingers of his left hand was bruised and torn. Lost time - ?

An employee was clearing right-of-way. His axe glanced off brush and struck foot. Lost time - two weeks.

A lineman trainee was using dynamite. When the dynamite 'went off', he was in such a position that debris was blown into his face. His face was badly bruised and both eyes severely injured. The right eye will be lost. Lost time - not determined yet.

Wire was being strung on new construction. A lineman was tying-in when the boom truck passed by. The hand line, attached to the pole caught on the truck. The pole broke and fell with the lineman. The fall fractured his skull, crushed his left arm and caused other minor injury. Lost time - undetermined.

'I said a prayer for all when I realized you were going across. Perhaps that's what saved us all.

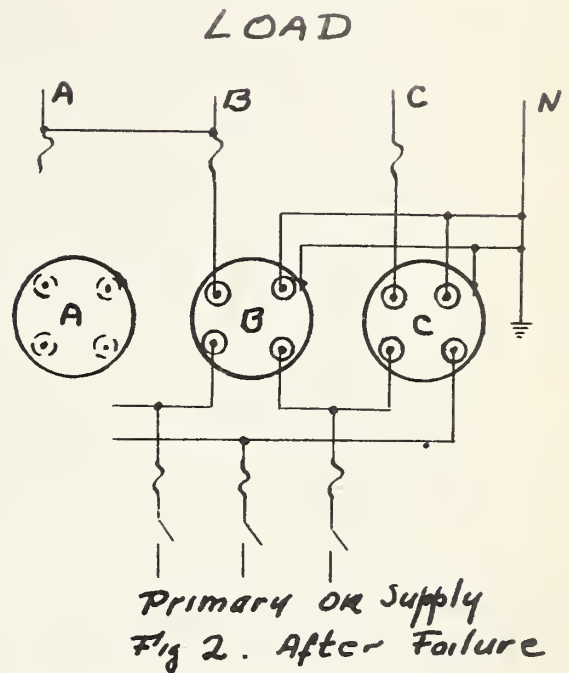
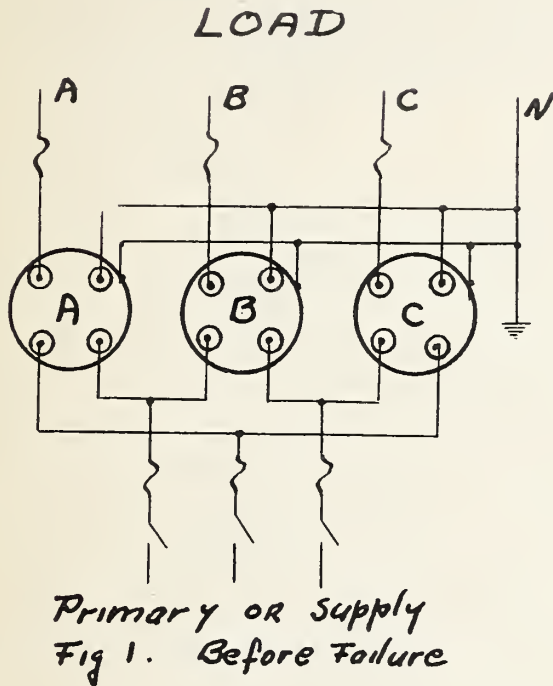
'Now think it over, both of you. And I'll bet you are both still shaking in your shoes.

'And please, for God's sake, don't try it again.'

Open Delta Connections

Section I

Substation Delta-Wye Bank



Directions

1. Open all disconnects or cut-outs on the supply and load sides of the substation transformer bank, ground the lines on the load side.
2. Disconnect all transformers supplying three-phase loads, regardless whether two or three transformers are used. (See Section II for method of reconnecting.)
3. Disconnect all leads to the transformer that failed.
4. Reconnect the phase wire on the Y side of the faulty transformer to phase B or phase C, selecting the one which is less loaded. Be sure the connection is made on the load side of the cut-out or recloser. (For this example we are assuming that phase B is the less loaded phase and have paralleled the phase A and B load feeders.)
5. Make certain that no connections other than the ones specified above are changed on either supply or load side. Reclose the supply-side disconnects or cut-outs on the two good transformers, re-energizing the transformer bank. Reclose the load-side cut-outs or reclosers to re-energize the lines.

Note 1: The load currents on the transformers should be measured near the secondary bushings to determine that the transformers are not loaded beyond the nameplate current rating. If after the initial inrush current has subsided the current is greater than the transformer rating, some load must be disconnected until the defective transformer is replaced.

Note 2: On three-phase lines the load balance can be improved by dividing the load formerly on phase A between phases B and C.

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Section II

Consumer's Three-phase Bank (this applies only to Wye-Delta banks)

All banks of 3 transformers serving consumer power loads must be reconnected on primary (supply) side.

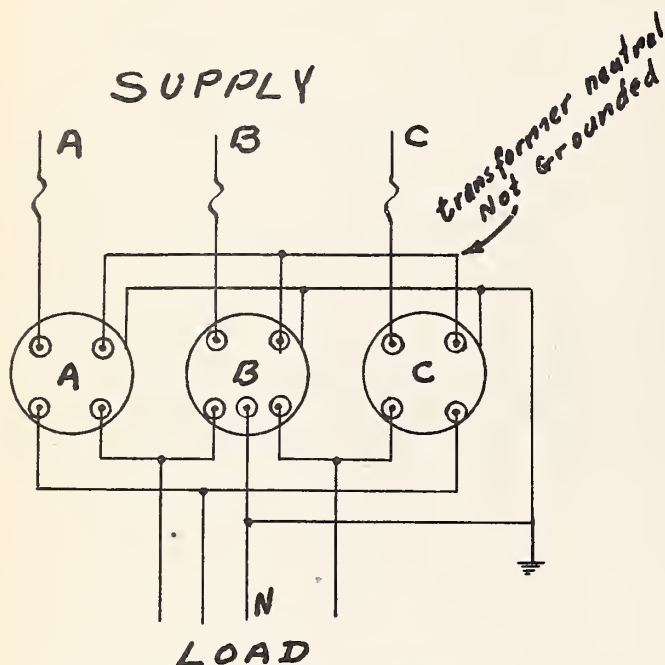


FIGURE 3. CONSUMER'S BANK BEFORE SUBSTATION TRANSFORMER FAILED.

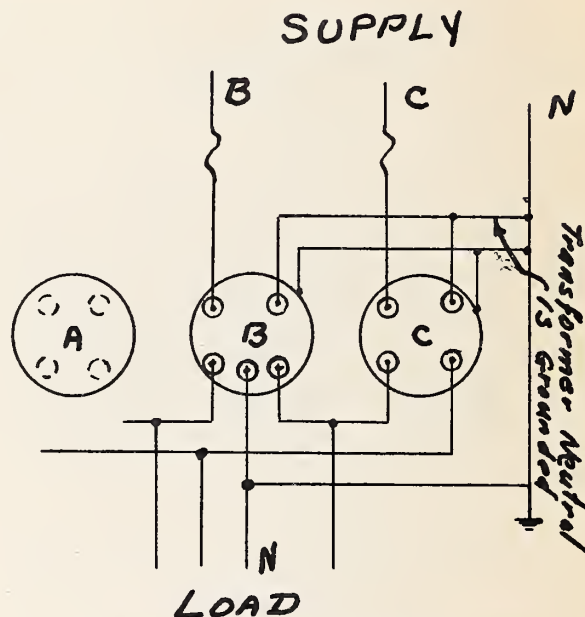


FIGURE 4. CONSUMER'S BANK AFTER SUBSTATION TRANSFORMER FAILED.

Where consumer's service is from V to open-Delta connection (two transformers) make no transformer changes with the exception of making certain that the two primary leads are connected to the energized phases.

Where consumer's service is from Y-Delta connected transformers (three transformers) the transformers must be reconnected on the primary side.

Directions

1. Open cut-outs on all three phases on the primary side.
2. Disconnect and remove from service transformer A of the three transformers. The final connections are shown in Figure 4. Connect the transformer primary neutral to the system neutral.
3. If transformer A was supplying the single phase (120/240 volt) service for the bank, make certain that the transformer supplying this service after reconnection has the center secondary bushing grounded to the system neutral. All other center bushings should be ungrounded.
4. Make certain that no changes have been made to load-side connections of transformers.
5. See Note 1.
6. Reclose cut-outs on the two transformers that are to remain in service.
7. Check voltage and phase rotation before leaving consumer's premises. Phase rotation may be checked by observing direction of rotation of polyphase motors.